Please replace the paragraph beginning on page 5, line 5 with the following replacement paragraph:

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a4

Figure 20A is a first portion of a dispenser behavior diagram. Figure 20B is a second portion of a dispenser behavior diagram;

Please replace the paragraph beginning on page 6, line 4 with the following replacement paragraph:

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a5

Figure 41A is a first portion of a control structure flow diagram. Figure 41B is a second portion of a control structure flow diagram;

Please replace the paragraphs beginning on page 6, lines 7-10 with the following replacement paragraphs:

Figure 44A is a first portion of a flow diagram for HMI structure. Figure 44B is a second portion of a flow diagram for HMI structure;

a6

Figure 45A is a first portion of an electronic schematic diagram for main control board. Figure 45B is a second portion of an electronic schematic diagram for main control board. Figure 45C is a third portion of an electronic schematic diagram for main control board. Figure 45D is a fourth portion of an electronic schematic diagram for main control board. Figure 45E is a fifth portion of an electronic schematic diagram for main control board. Figure 45F is a sixth portion of an electronic schematic diagram for main control board. Figure 45G is a seventh portion of an electronic schematic diagram for main control board;

Figure 46A is a first portion of an electrical schematic diagram of a dispenser board. Figure 46B is a second portion of an electrical schematic diagram of a dispenser board. Figure 46C is a third portion of an electrical schematic diagram of a dispenser board. Figure 46D is a fourth portion of an electrical schematic diagram of a dispenser board; and

Figure 47A is a first portion of an electrical schematic diagram of a temperature board. Figure 47B is a second portion of an electrical schematic diagram of a temperature board. Figure 47C is a third portion of an electrical schematic diagram of a temperature board. Figure 47D is a fourth portion of an electrical schematic diagram of a temperature board.

Please replace the paragraph beginning on page 16, line 4 with the following replacement paragraph:

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a7

Figures 9A, 9B, and 10 are more detailed block diagrams of main control board 326. As shown in Figures 9A, 9B, and 10, main control board 326 includes a processor 370. Processor 370 performs temperature adjustments/dispenser communication, AC device control, signal conditioning, microprocessor hardware watchdog, and EEPROM read/write functions. In addition, processor 370 executes many control algorithms including sealed system control, evaporator fan control, defrost control, feature pan control, fresh food fan control, stepper motor damper control, water valve control, auger motor control, cube/crush solenoid control, timer control, and self-test operations.

Please replace the paragraph beginning on page 22, line 4 with the following replacement paragraph:

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a8

As explained below, sensing a thawed state of a frozen package in pan 122, such as meat or other food item that is composed primarily of water, is possible without regard to temperature information about the package or the physical properties of the package. Specifically, by sensing the air outlet temperature using sensor 276 (shown in Figures 4-6) located in air handler re-circulation air path 256 (shown in Figures 4-6), and by monitoring heater 270 on time to maintain a constant air temperature, a state of the thawed item may be determined. An optional additional sensor located in fresh food compartment 102 (shown in Figure 1), such as sensor 384 (shown in Figures 8, 9A, and 9B) enhances thawed state detection.

Please replace the paragraph beginning on page 24, line 1 with the following replacement paragraph:

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a9

Figures 16A and 16B illustrate an exemplary HMI board 462 for a refrigerator including electronic cold control. Board 462 also includes a plurality of touch sensitive keys or buttons 464 including LEDs to indicate activation of a selected control feature, actual temperature displays 466 for fresh food and freezer compartments, and slew keys 468 for adjusting temperature settings.

Please replace the paragraph beginning on page 24, line 12 with the following replacement paragraph:

a10

In an exemplary embodiment, the temperature setting system is substantially the same for each HMI user interface. When fresh food door 134 (shown in Figure 1) is closed, the HMI displays are off. When fresh food door 134 is opened, the displays turn on and operate according to the following rules. The embodiment for Figures 16A and 16B display actual temperature, and set points for the various LEDs illustrated in Figure 17 are set forth in Appendix Table 12.

Please replace the paragraph beginning on page 24, line 18 with the following replacement paragraph:

a11

Referring to Figures 16A and 16B, the freezer compartment temperature is set in an exemplary embodiment as follows. In normal operation the current freezer temperature is displayed. When one of the freezer slew keys 468 is depressed, the LED next to "SET" (located just below slew keys 468 in Figures 16A and 16B) is illuminated, and controller 160 (shown in Figures 2-4) waits for operator input. Thereafter, for each time the freezer colder/slew-down key 468 is depressed, the display value on freezer temperature display 466 will decrement by one, and for each time the user presses the warmer/slew-up key 468 the display value on freezer temperature display 466 will increment by one. Thus, the user may increase or decrease the freezer set temperature using the freezer slew keys 468 on board 462.

Please replace the paragraph beginning on page 25, line 18 with the following replacement paragraph:

a12

Similarly, and referring back to Figures 16A and 16B, fresh food compartment temperature is set in one embodiment as follows. In normal operation, the current fresh food temperature is displayed. When one of the fresh food slew keys 468 is depressed, the LED next to "SET" (located just below refrigerator slew keys 468 in Figures 16A and 16B) is illuminated and controller 160 waits for operator input. The displayed value on refrigerator temperature display 466 will decrement by one for each time the user presses the colder/slew-down key 468, and the display value on refrigerator temperature display 466 will increment by one for each time the user presses the warmer/slew-up key 468.

Please replace the paragraph beginning on page 26, line 18 with the following replacement paragraph:

a13

Once fresh food compartment and freezer compartment temperatures are set, actual temperatures (for the embodiment shown in Figures 16A and 16B) or temperature levels (for the embodiment shown in Figure 17) are monitored and displayed to the user. To avoid undue changes in temperature displays during various operational modes of the refrigerator system that may mislead a user to believe that a malfunction has occurred, the behavior of the temperature display is altered in different operational modes of refrigerator 100 to better match refrigerator system behavior with consumer expectations. In one embodiment, for ease of consumer use control boards 462, 470 and temperature displays 466, 476 are configured to emulate the operation of a thermostat.

Please replace the paragraph beginning on page 26, line 29 with the following replacement paragraph:

a14

For temperature settings, and as further described below, a normal operation mode in an exemplary embodiment is defined as closed door operation after a first state change cycle, i.e., a change of state from "warm" to "cold" or vice versa, due to a door opening or defrost operation. Under normal operating conditions, HMI board 462 (shown in Figures 16A and 16B) displays an actual average temperature of fresh food and freezer compartments 102, 104, except that HMI board 462 displays the set temperature for fresh food and freezer compartments 102, 104 while actual temperature fresh food is and freezer compartments 102, 104 is within a dead band for the freezer or the fresh food compartments.

Please replace the paragraph beginning on page 31, line 2 with the following replacement paragraph:

a15

A showroom mode is entered in an exemplary embodiment by selecting some odd combination of buttons 464, 472 (shown in Figures 16A-17). In this mode, the compressor stays off at all times, fresh food and freezer compartment lighting operate as normal (e.g., come on when door is open), and when a door is open, no fans run. To operate the turbo cool fans, a user pushes the Turbo cool button (shown in Figures 16A-17) and the fans turn on in high mode. When the user depresses the Turbo cool button a second time, the fans turn off. Furthermore, to control the fan speed, a user pushes the Turbo cool button one time for the fans to activate in low mode, push Turbo cool button twice to activate high mode, and push Turbo cool button a third time to deactivate the fans.

Please replace the paragraph beginning on page 31, line 13 with the following replacement paragraph:

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a16

In an exemplary embodiment, temperature controls operate as normal (without turning on fans or compressor) i.e., when door is opened, temperature displays "actual" temperature, approximately 70°. Selecting the Quick Chill or Quick Thaw button (shown in Figures 16A-17) results in the respective LEDs being energized along with the bottom pan cover and fans (audible cue). The LEDs and fans are de-energized by selecting the button again.

Please replace the paragraph beginning on page 31, line 29 with the following replacement paragraph:

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a17

For example when the user presses the "Water" button (see Figure 15), the water LED will light and the "Crushed" and Cubed" LEDs will shut off. If the door is closed, when the user hits the target switch with a glass, water will be dispensed. Dispensing ice, either cubed or crushed, requires that a dispensing duct door be opened by an electromagnet coupled to dispenser board 396 (shown in Figures 9A-10). The duct door remains open for about five seconds after the user ceases dispensing ice. After a predetermined delay, such as 4.5 seconds in an exemplary embodiment, the polarity on the magnet is reversed for 3 seconds in order to close the duct door. The electromagnet is pulsed once every 5 minutes in order to ensure that the door stays closed. When dispensing cubed ice, the crushed ice bypass solenoid is energized to allow cubed ice to bypass the crusher.

Please replace the paragraph beginning on page 33, line 8 with the following replacement paragraph:

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a18

When the user hits the dispenser target switch, a light coupled to dispenser board 396 (shown in Figures 9A-10) is energized. When the target switch is deactivated the light remains on for a predetermined time, such as about 20 seconds in an exemplary embodiment. At the end of the predetermined time, the light "fades out".

Please replace the paragraph beginning on page 33, line 12 with the following replacement paragraph:

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a19

Selecting the "Turbo Cool" button (see Figures 16A-17) initiates the turbo cool mode in the refrigerator. The "Turbo" LED on the HMI indicates the turbo mode. The turbo mode

A19 causes three functional changes in the system performance. Specifically, all fans will be set to high speed while the turbo mode is activated, up to a preset maximum elapsed time (e.g. eight hours); the fresh food set point will change to the lowest setting in the fresh food compartment, which results in changing the temperature, but will not change the user display; and the compressor and supporting fans will turn on for a predetermined period (e.g., about 10 minutes in one embodiment) to allow the user to "hear the system come on."

Please replace the paragraph beginning on page 33, line 27 with the following replacement paragraph:

A20 For thaw pan 122 operation the user presses the "Thaw" button (see Figures 16A-17) and the thaw algorithm is initialized. Once the thaw button is depressed, the chill pan fan will run for a predetermined time, such as 12 hours in an exemplary embodiment, or until the user depresses the thaw button a second time. For chill pan 122 operation the user presses the "Chill" button (see Figures 16A-17) and the chill algorithm is initialized. Once the chill button is depressed the chill pan fan will run for the predetermined time or until the user depresses the chill button a second time. The thaw and chill are separate functions and can have different run times, e.g., thaw runs for 12 hours and chill runs for 8 hours.

Please replace the paragraph beginning on page 34, line 4 with the following replacement paragraph:

A21 Service diagnostics are accessed via the cold control panel (see Figures 16A and 16B) of the HMI. In the event a refrigerator is to be serviced that does not have an HMI, the service technician plugs in an HMI board during the service call. In one embodiment, there are fourteen diagnostic sequences or modes, such as those described in Appendix Table 13. In alternative embodiments, greater or fewer than fourteen diagnostic modes are employed.

Please replace the paragraph beginning on page 34, line 10 with the following replacement paragraph:

A22 To access the diagnostic modes, in one embodiment, all four slew keys (see Figures 16A and 16B) are simultaneously depressed for a predetermined time, e.g., two seconds. If the displays are adjusted within a next number of seconds, e.g., 30 seconds, to correspond to a desired test mode, any other button is pressed to enter that mode. When the Chill button is pressed the numeric displays flash, confirming the particular test mode. If the Chill button

(shown in Figures 16A and 16B) is not pressed within 30 seconds of entering the diagnostic mode, the refrigerator returns to normal operation. In alternative embodiments, greater or lesser time periods for entering diagnostic modes and adjusting diagnostic modes are employed in lieu of the above described illustrative embodiment.

Please replace the paragraph beginning on page 34, line 29 with the following replacement paragraph:

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a23

Once the HMI self-test is invoked, all of the LEDs and numerical segments illuminate. When the technician presses the Thaw button (shown in Figures 16A-17), the Thaw light is de-energized. When the chill button is pressed, the Chill light is de-energized. This process continues for each LED/Button pair on the display. The colder and warmer slew keys each require seven presses to test the seven-segment LEDs.

Please replace the paragraph beginning on page 35, line 3 with the following replacement paragraph:

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a24

In one embodiment, the HMI test checks six thermistors (see Figures 9A and 9B) located throughout the unit in an exemplary embodiment. During the test, the test mode LED stops flashing and a corresponding thermistor number is displayed on the freezer display of the HMI. For each thermistor, the HMI responds by lighting either the Turbo Cool LED (green) for OK or the Freshness Filter LED (red) if there is a problem.

Please replace the paragraph beginning on page 36, line 25 with the following replacement paragraph:

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a25

Dispenser board 396 (shown in Figures 9A-10) responds to the address 0x12. The command byte, command received, communication response, and physical response are set forth in Appendix Table 21. The set buttons commands send the bytes specified in Appendix Table 22. The bits in the first two bytes correspond as shown in Table 22. Bytes 2 – 7 correspond to the respective LEDs as shown in Table 22. The read buttons command returns the bytes shown in Appendix Table 23. The bits in the first two bytes correspond to the values set forth in Table 23.

Please replace the paragraph beginning on page 38, line 4 with the following replacement paragraph:

a26

Power management is handled through design rules implemented in each algorithm that affects inputs/outputs (I/O). The rules are implemented in each I/O routine. A sweat heater (see Figure 10) and electromagnet (see Figure 10) may not be on at the same time. If compressor 412 is on (see Figures 9A and 9B), fans 274, 364, 366, 368 (shown in Figure 8-10) may only be disabled for 5 minutes maximum as set by Electrically Erasable Programmable Read Only Memory (EEPROM) 376 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 38, line 27 with the following replacement paragraph:

a27

An H bridge on dispenser board 324 (shown in Figures 9A, 9B, and 10) imposes timing and switching requirements on the software. In an exemplary embodiment, the switching requirements are as follows:

Please replace the paragraph beginning on page 39, line 20 with the following replacement paragraph:

a28

The following Figures 18A-44 illustrate, in exemplary embodiments, different behavior characteristics of refrigerator components in response to user input. It is understood that the specific behavior characteristics set forth below are for illustrative purposes only, and that modifications are contemplated in alternative embodiments without departing from the scope of the present invention.

Please replace the paragraph beginning on page 39, line 26 with the following replacement paragraph:

a29

Figures 18A and 18B are an exemplary behavior diagram 480 for sealed system control that illustrates the relationship between the user, the refrigerator's electronics and the sealed system. The sealed system starts and stops the compressor and the evaporator and condenser fans in response to freezer and fresh food temperature conditions. A user selects a freezer temperature that is stored in memory. In normal operation, e.g., not a defrost operation, the electronics monitor the fresh food and freezer compartment temperatures. If the temperature increases above the set temperature, the compressor and condenser fan are started and the evaporator fan is turned on. If the temperature drops below the set temperature, the evaporator fan is turned off after and the compressor and condenser are also deactivated. In a further embodiment, when the fresh food compartment needs cooling as

A24

determined by the set temperature, and further when the refrigeration compartment does not need cooling as determined by the set temperature, then the evaporator fan is turned on while the sealed system and condenser are turned off until temperature conditions in the fresh food chamber are satisfied, as determined by the set temperature.

Please replace the paragraph beginning on page 40, line 26 with the following replacement paragraph:

A30

Figures 20A and 20B are an exemplary dispenser behavior diagram 484 that illustrates the relationship between the user, the refrigerator's electronics and the dispenser. The user selects one of six choices: cubed for cubed ice, crushed for crushed ice, water to dispense water, light to activate a light, lock to lock the keypad, and reset to reset a water filter (see Figure 15). The electronics control activate water valves, toggles the light, sets the keypad in lockout mode and resets the water filter timer and turns on/off the water reset filter LED. The dispenser operates five routines to carry out a user selection.

Please replace the paragraph beginning on page 41, line 22 with the following replacement paragraph:

A31

Figures 21A and 21B are an exemplary diagram of HMI behavior 486. A user selects "up" or "down" slew keys (shown in Figures 16A-17) on the cold control board to increment or decrement temperature set for the freezer and/or fresh food compartment. A newly set value is stored in EEPROM 376 (shown in Figures 9A and 9B). When the user depresses a "Turbo Cool", "Thaw", or "Chill" key (shown in Figures 16A-17) on the board, the corresponding algorithm is performed by the control system. When the user depresses the freshness filter "Reset" key (shown in Figure 17) for 3 seconds, a water freshness filter timer is reset and the LED is turned off.

Please replace the paragraph beginning on page 42, line 6 with the following replacement paragraph:

A32

The user selects water to be dispensed and depresses the cradle or target switch. Once water is selected and the target switch is depressed, a delay timer is initialized, and a request is made by HMI board 324 (shown in Figure 8) to turn on the dispenser light. The delay timer will be reset if the target switch is released. The request to dispense water from HMI board 324 (shown in Figure 8) is transmitted to the communications port to open water valve

A32

350 (shown in Figures 9A and 9B). Main control board 326 (shown in Figures 8-9B) acknowledges the request, closes the water relay and commands water valve 350 open. When the water relay is closed, the timer is reset and watchdog timer in the dispenser is activated. When the timer expires, main control board 326 opens the water relay (not shown) and water valve 350 is closed.

Please replace the paragraph beginning on page 42, line 24 with the following replacement paragraph:

A33

Figure 23 is an exemplary crushed ice dispenser interactions diagram 490 that shows the interactions between a user, HMI board 324 (shown in Figure 8), the communications port, and main control board 326 (shown in Figures 8-10) in controlling a light, a refrigerator duct door, and auger motor 346 (shown in Figures 9A and 9B) when a user selects crushed ice. To obtain crushed ice, the user first selects crushed ice by depressing the crushed ice button (see Figure 11) on the control panel, and second, activates the target switch or cradle within the ice dispenser by depressing it with a cup or glass. HMI board 324 then sends a signal to open the dispenser duct door and turn on the dispenser light, and sends a request to the communications port to turn auger motor 346 (shown in Figure 8) on and to start the delay timer. The delay timer functions to ensure the transmission from HMI board 324 to main control board 326 (shown in Figures 8-9B) is completed. The communications port then transfers the start auger command to main control board 326.

Please replace the paragraph beginning on page 43, line 12 with the following replacement paragraph:

A34

Figure 24 is an exemplary cubed ice dispenser interactions diagram 492 that illustrates the interaction between a user, HMI board 324 (shown in Figure 8), the communications port, and main control board 326 (shown in Figures 8-10) in controlling a light, a refrigerator duct door, and auger motor 346 (shown in Figure 8) when a user selects cubed ice (see Figure 15). To obtain cubed ice, the user first selects cubed ice by depressing the cubed ice button (shown in Figure 15) on the control panel, and second, activates the target switch or cradle within the ice dispenser by depressing it with a cup or glass. HMI board 324 then sends a signal to open the door duct and turn on the dispenser light, and sends a request to the communications port to turn auger motor 346 on and to start the delay timer. The delay timer functions to ensure the transmission from HMI board 324 to main control board 326 is

completed. The communications port then transfers the start auger command to main control board 326.

Please replace the paragraph beginning on page 44, line 2 with the following replacement paragraph:

a35

Figure 25 is an exemplary temperature setting interaction diagram 494. When the user enters a temperature select mode as described above, HMI board 324 (shown in Figure 8) sends a request via the communication port for current temperature setpoints, which are returned by main control board 326 (shown in Figures 8-10). HMI board 324 then displays the setpoints as described above. The user then enters new temperature setpoints by pressing slew keys (shown in Figures 16-17 and described above). The new setpoints then are sent via the communication port to main control board 326, which updates EEPROM 376 (shown in Figures 9A and 9B) with the new temperature values.

Please replace the paragraph beginning on page 44, line 12 with the following replacement paragraph:

a36

Figure 26 is an exemplary quick chill interaction diagram 496 illustrating the response of HMI board 324 (shown in Figure 8), communication port, main control board 326 (shown in Figures 8-10), and a quick chill device in reaction to user input. In the exemplary embodiment, when the user desires activation of quick chill system 160 (shown in Figures 2) a user presses a Chill button (shown in Figures 16A-17), which begins quick chill mode of system 160, sets a timer, and activates a Quick Chill LED indicator. A signal is sent to the communications port to request start quick chill system fan 274 (shown in Figures 4-6 and described above) and position dampers 260, 266 (shown in Figures 4-6 and described above), the request is acknowledged and the fan drive transistor and damper drive bridges are activated to start quick chill cooling (described above in relation to Figures 4-7) in a quick chill system pan 122 (shown in Figures 1-2 and described above). When the timer expires, or upon a second press of the Chill button by the user, a signal is sent to request a stop of quick chill system fan 274 and to position dampers 206, 266 appropriately, the request is acknowledged, fan 274 is deactivated to stop cooling in quick chill pan 122, and the quick chill cooling system LED is deactivated.

Please replace the paragraph beginning on page 44, line 29 with the following replacement paragraph:

a37

Figure 27 is an exemplary turbo mode interaction diagram 498 that illustrates the interaction between a user, HMI board 324 (shown in Figure 8), the communications port, and main control board 326 (shown in Figures 8-10) in controlling the turbo mode system. The user depresses the turbo cool button (shown in Figures 16A-17) and HMI board 324 places the refrigerator in the turbo cool mode and starts an eight hour timer. HMI board 324 sends a turbo cool command over the communications port to main control board 326 (shown in Figures 8-10). Main control board 326 acknowledges the request and executes the turbo cool algorithm. In addition main control board 326 activates the turbo cool LED. The refrigerator system and all fans are turned on high speed mode according to the turbo cool algorithm.

Please replace the paragraph beginning on page 45, line 13 with the following replacement paragraph:

a38

Figure 28 is an exemplary freshness filter reminder interaction diagram 500 that illustrates the interactions between a user, HMI board 324 (shown in Figure 8), the communications port, and main control board 326 (shown in Figures 8-10) in controlling the freshness filter light (shown in Figures 16A-17). A user depresses and holds the freshness filter restart button (shown in Figures 16A-17) for at least three seconds until the LED flashes. HMI board 324 places the refrigerator filter reminder to timer reset mode, turns the freshness filter light off, and sends a command across the communication port to main control board 326 to clear timer values in the Electrically Erasable Programmable Read Only Memory (EEPROM) 376 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 45, line 23 with the following replacement paragraph:

a39

HMI board 324 also resets the freshness filter timer for a period of at least six months. When the time period expires, the freshness filter light on the refrigerator is turned on. On a daily basis, HMI board 324 updates timer values based on the six month timer. The daily timer updates are transferred by HMI board 324 through the communications port to main control board 326, where the daily timer updates are logged as new timer values in the EEPROM 376 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 45, line 30 with the following replacement paragraph:

a40

Figure 29 is an exemplary water filter reminder interaction diagram 502 that illustrates the interaction between a user, HMI board 324 (shown in Figure 8), the communications port, and main control board 326 (shown in Figures 8-10) in reminding the user that the water filter needs to be replaced by controlling the water filter light (shown in Figures 16A-17). A user depresses and holds the water filter restart button 464 (shown in Figures 16A-17) for a predetermined time, such as for at least three seconds in an exemplary embodiment, until the LED flashes. HMI board 324 places the refrigerator filter reminder to timer reset mode, turns the water filter light off, and sends a command across the communication port to main control board 326 to clear timer values in the Electrically Erasable Programmable Read Only Memory (EEPROM) 3769 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 46, line 9 with the following replacement paragraph:

a41

HMI board 324 also resets the water filter timer for a period of at least six months. When the time period expires, the water filter light on the refrigerator is turned on to remind the user to replace the water filter. On a daily basis, HMI board 324 updates timer values based on the timer. The daily timer updates are transferred by HMI board 324 through the communications port to main control board 326 (shown in Figures 8-10), where the daily timer updates are logged as new timer values in the EEPROM 376 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 49, line 9 with the following replacement paragraph:

a42

When a diagnostic mode has been specified, the circuit diagnostic capability is enabled as described above. Both voltages around resistor Rsense are read and motor power is calculated in accordance with the relationship:

$$(V_1 - V_2)^2 / Rsens \qquad (3)$$

An expected motor wattage and tolerance are read from EEPROM 376 (shown in Figures 9A and 9B) and are compared to the actual motor power to provide diagnostic information. If the actual wattage is not within the target range, a failure is reported. Upon completing the diagnostic mode, the motor is turned off.

Please replace the paragraph beginning on page 49, line 18 with the following replacement paragraph:

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a43

Figure 36 is an exemplary turbo cycle flow diagram 516. To begin, a user depresses the turbo cool button (shown in Figures 16A-17) which is electrically connected to HMI board 324 (shown in Figure 8). The condition is checked if the turbo LED is currently turned on. If the LED is turned on, the turbo mode LED is turned off, and the refrigerator is taken out of turbo mode by the control algorithm and the system reverts to the fresh food and sealed system control algorithms and user defined temperature set points.

Please replace the paragraph beginning on page 50, line 2 with the following replacement paragraph:

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a44

Figure 37 is an exemplary freshness filter reminder flow diagram 518. The first condition checked is whether the reset button (shown in Figures 16A-17) has been depressed for greater than three seconds. If the reset button has been depressed, the day counter is reset to zero, the freshness LED is turned on for two seconds and then turned off. If the reset button has not been depressed, the amount of time elapsed is checked. If twenty-four hours has elapsed, the day counter is incremented, and the number of days since the filter was installed is checked. If the number of days exceeds 180 days, the freshness LED is turned on.

Please replace the paragraph beginning on page 50, line 10 with the following replacement paragraph:

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a45

Figure 38 is an exemplary water filter reminder flow diagram 520. The first condition checked is whether the reset button (shown in Figures 16A-17) has been depressed for greater than three seconds. If the reset button has been depressed, the day/valve counter is reset to zero, the water LED is turned on for two seconds and then turned off. If the reset button has not been depressed two conditions are checked: if twenty-four hours has elapsed or if water is being dispensed. If either condition is met, the day/valve counter is incremented and the amount of time the water filter has been active is checked. If the water filter has been installed in the refrigerator for more than 180 or 365 days, in exemplary alternative embodiments, or if the dispenser valve has been engaged for greater than a predetermined time, such as seven hours and fifty-six minutes in an exemplary embodiment, the water LED is turned on to remind the user to replace the water filter.

Please replace the paragraph beginning on page 50, line 23 with the following replacement paragraph:

Figure 39 is an exemplary flow diagram of one embodiment of a sensor-read-and-rolling-average algorithm 522. For each sensor, a calibration slope m and offset b are stored in EEPROM 376 (shown in Figures 9A and 9B), along with an "alpha" value indicating a time period over which a rolling average of sensor input values is kept. Each time the sensor is read, the corresponding slope, offset and alpha values are retrieved from EEPROM 376. The slope m and offset b are applied to the input sensor value in accordance with the relationship:

a46

$$SensorVal = SensorVal * m + b \qquad (4)$$

The slope-and-offset-adjusted sensor value then is incorporated into an adjusted corresponding rolling average for each cycle in accordance with the relationship:

$$RollingAVG_n = alpha * SensorVal + (1 - alpha) * RollingAVG_{(n-1)} \qquad (5)$$

where n corresponds to the current cycle and (n-1) is the previous cycle.

Please replace the paragraph beginning on page 51, line 4 with the following replacement paragraph:

Figure 40 illustrates an exemplary control structure 524 for main control board 326 (shown in Figures 8-9B). Main control board 326 toggles between two states: an initial state (I) and a run state (R). Main control board 326 begins in the initialize state and moves to the run state when state code equals R. Main control board 326 will change from the run state back to the initialize state if state code equals I.

a47

Please replace the paragraph beginning on page 51, line 10 with the following replacement paragraph:

Figures 41A and 41B are an exemplary control structure flow diagram 526. The control structure is composed of an initialize routine and a main routine. The main routine interfaces with the command processor, update rolling average, fresh food fan speed and control, fresh food light, defrost, sealed system, dispenser, update fan speeds, and update times routines. Upon power-up, the command processor 370 (shown in Figures 9A and 9B),

a48

dispenser 396 (shown in Figures 9A and 9B), update fan speeds, and update times routines are initialized. The main routine during initialization provides state code information to the update time routine, which in turn updates the defrost timer, fresh food door open timer, dispenser time out, sealed system off timer, sealed system on timer, freezer door open timer, timer status flag, daily rollover, and quick chill data stores.

Please replace the paragraph beginning on page 53, line 3 with the following replacement paragraph:

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a49

Figures 44A and 44B are an exemplary flow diagram 532 for HMI structure. HMI state machines are shown in Figures 44A and 44B and are similar in structure to the control board state machines (shown in Figures 41A and 41B). The system enters the main software routine for the HMI board after a system reset and the system is initialized. HMI structure includes a main routine that interfaces with a command processor, dispense, diagnostic, HMI diagnostic, setpoint adjust, Protocol Data Parse, Protocol Data Xmit, and Keyboard scan routines. The main routine also interfaces with data stores: DayCount, Turbo Timer, OneMinute, and Quick Chill Timer.

Please replace the paragraph beginning on page 53, line 28 with the following replacement paragraph:

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a50

To achieve control of energy management and temperature performance, main controller board 326 (shown in Figure 8-10) interfaces with dispenser board 396 (shown in Figures 9A and 9B) and temperature adjustment board 398 (shown in Figures 9A and 9B).

Please replace the paragraph beginning on page 54, line 2 with the following replacement paragraph:

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a51

Figures 45A-G are an exemplary electronic schematic diagram for an exemplary main control board 534 including power supply circuitry 536, biasing circuitry 538, microcontroller 540, clock circuitry 542, reset circuitry 544, evaporator/condenser fan control 546, DC motor drivers 548 and 550, EEPROM 552, stepper motor 554, communications circuitry 556, interrupt circuitry 558, relay circuitry 560 and comparator circuitry 562.

Please replace the paragraph beginning on page 56, line 29 with the following replacement paragraph: